



04-06-07

AF/LEW

PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:)
)
Frederic M. Newman)
) Art Unit: **3661**
Application No. **10/720,594**)
) Examiner: **Nguyen, Thu V**
Filed: **11/24/2003**)
) Attorney Docket No. **08876.105034**
Title: **Crown Out-Floor Out Device For A**)
Well Service Rig)

APPEAL BRIEF TRANSMITTAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

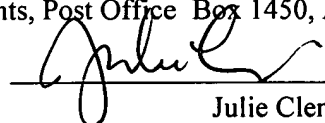
Sir:

Transmitted herewith are papers in the above-identified application.

- ☒ Appeal Brief (18 pages), submitted in triplicate, with Attachments (5)
- ☐ Applicant(s) claim small entity status. See 37 C.F.R. § 1.27.
- ☐ An additional fee is not required.
- ☒ The additional fee is calculated as shown below:

					SMALL ENTITY		LARGE ENTITY	
	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE	ADDIT. FEE	RATE	ADDIT. FEE
TOTAL	22	MINUS	27=		x25	\$	x50	\$
INDEP.	2	MINUS	3=		x100	\$	x200	\$
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIMS					+180	\$	+360	\$
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 04.05.2007
Julie Clements

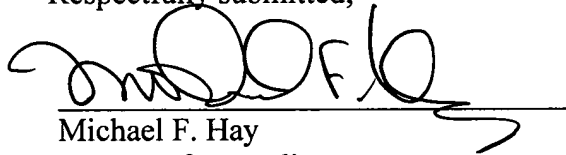
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	FEE	FEE PAID	FEE	FEE PAID
<input type="checkbox"/> LATE FILING, FEE OR OATH	\$65		\$130	
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<input type="checkbox"/> 3 Month Extension of Time			\$1,020	\$
SUBTOTAL (3)		\$	Total	\$500

- ☒ The Commissioner is hereby authorized to charge any additional fees required under 37 C.F.R. § 1.16, or to credit any overpayment, to Deposit Account No. 50-3786, order number 08876.105034. A duplicate of this sheet is enclosed. ✓

Dated: April 5, 2007

Respectfully submitted,



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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:)	
)	
Frederic M. Newman)	Examiner: Thu V. Nguyen
)	
Serial No. 10/720,594)	Art Unit: 3661
)	
Filed: November 24, 2003)	Confirmation No. 5037
)	
For: CROWN OUT-FLOOR OUT DEVICE)	Attorney Docket No.
FOR A WELL SERVICE RIG)	08876.105034
)	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant (herein, "Appellant") hereby appeals the Final Rejection of claims 4-6, 8 and 10-16. In support of the Notice of Appeal mailed on January 18, 2007 in the above referenced application, Appellant hereby submits this Appeal Brief under 37 C.F.R. § 1.191 to appeal the Examiner's rejection of this application as reported in the Official Action mailed on July 18, 2006. The Commissioner is hereby authorized to charge the fee due under 37 C.F.R. §41.37 associated with submission of the Appeal Brief to the United States Patent Office Deposit Account No. 50-3786, attorney docket no. 08876.105034. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extension fees to Deposit Account No. 50-3786, attorney docket no. 08876.105034.

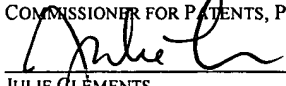
CERTIFICATE OF MAILING VIA EXPRESS MAIL	
PURSUANT TO 37 C.F.R. 1.10, I HEREBY CERTIFY THAT I HAVE INFORMATION AND A REASONABLE BASIS FOR BELIEF THAT THIS CORRESPONDENCE IS BEING SENT VIA EXPRESS MAIL POST OFFICE TO ADDRESSEE ON THE DATE INDICATED BELOW AND IS ADDRESSED TO: MAIL STOP APPEAL BRIEF- PATENTS, COMMISSIONER FOR PATENTS, P.O. Box 1450, ALEXANDRIA, VA 22313-1450.	
 JULIE CLEMENTS EXPRESS MAIL LABEL: 614906927US	<u>04.05.2007</u> DATE OF MAILING: 04/05/2007

Table of Contents

Real Party in Interest	3
Related Appeals and Interferences	3
Status of Claims.....	3
Status of Amendments.....	3
Summary of Claimed Subject Matter	4
Grounds of Rejection to be Reviewed on Appeal	6
Argument.....	6
Conclusion	12
APPENDIX A - Claims Appendix	13
APPENDIX B - Evidence Appendix.....	17
APPENDIX C - Related Proceedings Appendix.....	18

REAL PARTY IN INTEREST

The real party in interest in this appeal is Key Energy Services, Inc., which is the assignee of the present application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and no related interferences regarding the above identified patent application.

STATUS OF CLAIMS

Claims 4-6, 8 and 10-27 are pending in this application. Claims 1-3, 7 and 9 have been cancelled. Claims 4-6, 8 and 10-16 are presently under examination, with claims 17-27 having been withdrawn from examination by the Examiner following a reply to a Restriction Requirement. The pending claims are presented in Appendix A of this brief.

In the Final Office Action dated July 18, 2006, claims 4-6, 8 and 10-16 stand finally rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Richardson, U.S. Patent No. 4,545,017, in view of Ruddy, U.S. Patent No. 6,527,130.

According to the Notice of Panel Decision from Pre-Appeal Brief Review mailed on March 5, 2007, the application remains under appeal and proceeds to the Board.

Claims 4-6, 8 and 10-16 are the subject of this appeal.

STATUS OF THE AMENDMENTS

The Final Office Action dated July 18, 2006 indicated that the amendments filed on April 13, 2006 had been entered. In response, a Pre-Appeal Brief Request for Review, along with the Notice of Appeal, was filed on January 18, 2007. An adverse Notice of Panel Decision from Pre-Appeal Brief Review issued on March 5, 2007.

No other amendments or submissions are pending in the application.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter relates, in part, to a process for controlling the speed of a traveling block of a well workover rig. Specification, paragraph [0005]. Specifically, the present claims provide a process that calculates the traveling block position, traveling block velocity, weight supported by the traveling block and momentum of the traveling block before applying the braking system to slow down and eventually stop the traveling block when it approaches a crown-out or floor-out position. *Id.* The system thus allows for the safe and efficient operation of a rig. *Id.*

Crown out/floor out of the traveling block occurs when the traveling block reaches the upper most safe position (crown out) or lower most safe position (floor out), and can be a hazard to personnel and/or damage equipment. Specification, paragraph [0002]. Often, this occurs because the operator cannot see the traveling block when pulling or running tubing, or due to distraction. *Id.*

The claimed process of claim 4 includes the steps of:

- determining the speed of the traveling block within a traveling range; Specification, paragraph [0023];
- determining the weight on the traveling block with a weight sensing device; Specification, paragraph [0020];
- comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the weight on the traveling block; Specification, paragraph [0024], paragraph [0027];
- wherein the maximum velocity value in an upper slow down zone is lower than the maximum velocity at a point immediately below the upper slow down range, wherein the length of the upper slow down zone is proportional to the momentum of the traveling block; Specification, paragraph [0025], paragraph [0030], paragraph [0032], paragraph [0036], Figures 5-7;

- adjusting the speed of the traveling block to maintain speed at or below the maximum velocity value. Specification, paragraph [0024].

Claim 5, which depends from claim 4, adds the limitation that the speed of the traveling block is adjusted by slowing the speed of the engine controlling the traveling block. Specification, paragraph [0024], paragraph [0037].

Claim 6, which depends from claim 4, adds the limitation that an alarm is sounded when the speed of the traveling block exceeds the maximum velocity value. Specification, paragraph [0024].

Claim 8, which depends from claim 4, adds the limitation that the maximum velocity value in the upper slow down zone continually decreases from the bottom of the zone to the top of the zone. Specification, paragraph [0031].

Claim 10, which depends from claim 4, adds the limitation that the maximum velocity value in a lower slow down zone of the traveling range of the traveling block is lower than the maximum velocity value at a point immediately above the lower slow down zone. Specification, paragraph [0025].

Claim 11, which depends from claim 10, adds the limitation that the maximum velocity value in the lower slow down zone continually decreases from the top of the zone to the bottom of the zone. Specification, paragraph [0031].

Claim 12, which depends from claim 10, adds the limitation that the length of the lower slow down zone is proportional to the momentum of the traveling block. Specification, paragraph [0030].

Claim 13, which depends from claim 4, adds the steps of sensing when the traveling block has reached an upper most position and stopping the movement of the traveling block when the upper most position is reached. Specification, paragraph [0025], Figure 4.

Claim 14, which depends from claim 13, adds the limitation that sensing of the upper most position step is accomplished with a metal detector sensing the traveling block. Specification, paragraph [0026].

Claim 15, which depends from claim 4, adds the limitation that the traveling block speed is slowed using a pneumatic brake attached to a proportional valve. Specification, paragraph [0031].

Claim 16, which depends from claim 4, adds the limitation that the traveling range has an upper limit and a lower limit, the process further comprising logging whether or not the traveling block reaches either the upper limit or the lower limit. Specification, paragraph [0042].

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. The rejection of claims 4-6, 8 and 10-16 under 35 U.S.C. §103(a), as being obvious over Richardson, U.S. Patent No. 4,545,017 (hereinafter “Richardson”), in view of Ruddy, U.S. Patent No. 6,527,130 (hereinafter “Ruddy”).

ARGUMENT

1. Richardson and Ruddy Fail to Teach All of the Elements of Claim 4

Claim 4 requires, *inter alia*,

- comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the measured weight on the traveling block, wherein the weight of the traveling block is measured by a weight sensing device
- the length of the upper slow down zone is proportional to the momentum of the traveling block

The combination of Richardson and Ruddy fails to disclose at least these features.

A. Richardson and Ruddy Fail to Teach Comparing the Speed of the Traveling Block to a Maximum Velocity Value, Wherein the Maximum Velocity Value is Determined as a Function of the Measured Weight on the Traveling Block, Wherein the Weight of the Traveling Block is Measured by a Weight Sensing Device

Richardson discloses a drilling apparatus system for monitoring the exact elevation of the traveling block, which allows the operator to select pre-set operating speeds. The system allows the traveling block to be slowed according to pre-set parameters when approaching the crown or the floor.

Richardson fails to disclose determining the maximum velocity as a function of measured weight on the traveling block and fails to teach any measurement of the weight of the traveling block. Rather, Richardson discloses that the operator selects preset parameters for elevation, direction of travel, load and speed; and that this operator selected speed value against which measured speed is compared. The pre-selected limits for speed and acceleration, load and limits of travel are “unalterably set... at the owner’s discretion.” Richardson, col. 7, lines 53-57. Although the Examiner suggests that “the maximum velocity can be changed by the owner by selecting another velocity parameter,” no support or evidence is provided for this assertion. Advisory Action dated March 5, 2007. Even if this assertion were true and the maximum velocity were alterable by the owner, this still does not meet all of the claim limitations.

Thus, Richardson clearly does not disclose comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the measured weight on the traveling block, wherein the weight of the traveling block is measured by a weight sensing device.

Ruddy discloses a method for measuring a load attached to a crane hoist, and then determining a maximum speed at which a load may be moved, based upon the power capability of the crane, for safe operation thereof.

Ruddy does not disclose comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the measured weight on the traveling block, wherein the weight of the traveling block is measured by a weight sensing device. While Ruddy discloses

determining the load on a crane hoist and determining a maximum operating speed, Ruddy does not suggest comparing the maximum velocity to the actual velocity, and it does not suggest determining the load with weight sensors.

In fact, Ruddy clearly teaches away from the use of weight sensors for dynamic determination of the block weight. Ruddy states that the signal generated from the load cell in a dynamic environment is typically inaccurate. Based upon the statements made in Ruddy regarding the use of load cells, one of ordinary skill in the art would have no reasonable expectation of success in combining the teachings of Richardson with the load cells described in Ruddy to arrive at Applicant's invention.

Thus, Ruddy similarly does not disclose comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the measured weight on the traveling block, wherein the weight of the traveling block is measured by a weight sensing device.

Therefore, because the combination of Richardson and Ruddy fail to disclose comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is a function of measured weight and the weight is measured with a weight sensing device, rejection is improper. Withdrawal of the rejection and allowance of the claims are respectfully requested.

B. Richardson and Ruddy Fail to Teach that the Length of the Upper Slow Down Zone for the Traveling Block is Proportional to the Momentum of the Block

Claim 4 requires, *inter alia*, that the length of the upper slow down zone for the traveling block is proportional to the momentum of the block. The combination of Richardson and Ruddy fail to disclose this feature.

Proportionality of the length of the upper slow down zone to the momentum of the traveling block means that when the block has a greater momentum, the length required for the upper slow down zone is longer than for a lower momentum. See Newman Application, paragraph [0036]. The examples in Richardson merely disclose a maximum allowed velocity of the traveling block at different specified

distances from the crown or floor based upon which of several different pre-set programs are selected. Put differently, the values disclosed in columns 7-8 of Richardson, Table 1, Example 1, and the hypothetical example offered by the Examiner, merely show a decrease in the velocity of the traveling block as the traveling block nears a stopping point. Richardson does not in any way disclose or suggest proportionality between the length of the upper slow down zone and the momentum of the traveling block.

All of the Richardson parameters are pre-set, and cannot be changed. (Richardson, col. 7, lines 51-57, stating “preselected limits... are unalterably set...”) Thus, the deceleration program is selected by the rig owner prior to the actual operation of the rig and is based upon assumed variables, rather than being based upon the actual, calculated momentum of the traveling block. The pre-set parameters are not variable and thus the upper slow down zone cannot be proportional to the momentum of the traveling block, because the momentum of the traveling block varies based upon the measured weight of the traveling block. Any assertion by the Examiner that the pre-set parameters can be automatically changed as a function of the weight of the block (Advisory Action dated November 7, 2006), is unsupported by Richardson and both contrary to and detrimental to the Richardson invention, as the specification clearly states that the preselected parameters are “unalterably set.” Richardson, col. 7, lines 51-57.

Thus, Richardson fails to disclose that the upper slow down zone is proportional to the momentum of the traveling block.

Ruddy is completely silent with respect to any proportionality of the upper slow down zone to the momentum of the traveling block. Instead, the Examiner claims that using the momentum of the block to determine the length of the upper and lower slow down zone would have been well known. The Examiner, however, has provided no evidence or support for this statement.

During prosecution, the Examiner ignored repeated requests to produce documentary authority for the assertion that the limitations of original claims 9 (now incorporated into independent claim 4) and 12 are well-known in the art. See Amendment and Response dated April, 13, 2006, page 6, paragraph 4 and page 7,

paragraph 4. MPEP 2144.03(c) requires that, when challenged by the Applicant, the Examiner provide adequate evidence of officially noticed facts. To date, the Examiner has provided no documentary authority or evidence to support the assertion that the length of the upper and lower slow down zones are proportional to the momentum of the traveling block are well known in the art.

Thus, because Richardson and Ruddy fail to disclose all of the elements of claim 4, and because the Examiner has failed to provide documentary authority or evidence, Appellant respectfully requests that the pending obviousness rejection of claim 4, and claims 5-6, 8 and 10-16 depending therefrom, be withdrawn or reversed.

2. No Motivation to Combine Richardson and Ruddy

Even if all of the elements of the claims are disclosed by Richardson and Ruddy, Appellant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a) for claims 4-6, 8 and 10-16 over Richardson in view of Ruddy *inter alia* because the motivation to combine these two references is lacking.

MPEP §2143.01 states “there are three possible sources for motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art.” *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed Cir. 1998) (“the combination of the references taught every element of the claimed invention, however without a motivation to combine, a rejection based on a *prima facie* case of obvious was held improper.”)

MPEP §2143.01 requires that there must be “some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the reference themselves or in the knowledge generally available to one of ordinary skill in the art” to establish *prima facie* obviousness. *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000); *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002).

As argued in the Response dated October 18, 2006, Appellant submits there is no suggestion in Richardson or Ruddy, or in the knowledge generally available to one of ordinary skill in the art, to combine the teachings of the references.

The Examiner admits that Richardson does not disclose comparing the speed of the block to a maximum velocity and does not teach determining the maximum velocity as a function of measured weight on the traveling block. Office Action mailed July 18, 2006, page 2. The Examiner relies upon Ruddy for the teaching of determining a maximum velocity value as a function of measured weight of the traveling block. However, combining the elements of Ruddy is clearly contrary and detrimental to the Richardson invention which, as described in the specification, employs unalterable preset parameters.

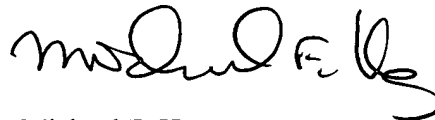
Richardson does not disclose that the maximum values may be automatically changed. Richardson merely discloses that, if known, the exact weight on the line may be used to more accurately determine the velocity of the traveling block. However, as noted in the very next sentence, this value is still compared against the pre-selected maximum velocity value, and thus this maximum velocity value does not vary based upon the measured weight of the traveling block. At most, knowing the weight of the traveling block on the line merely allows the owner to make a more informed selection from the various pre-selected parameters. It does not however, provide the operator, or any other person, the ability to change the maximum values, nor does it change the maximum values automatically.

Because neither Richardson nor Ruddy provide any motivation to combine the references, Appellant respectfully requests that the pending obviousness rejection of claim 4, and claims 5-6, 8 and 10-16 depending therefrom, be withdrawn or reversed.

CONCLUSION

In view of the foregoing remarks, Appellant respectfully submits that claims 4-6, 8 and 10-16 are drawn to novel subject matter, patentably distinguishable over the prior art of record. Withdrawal of the rejection and allowance of the claims is respectfully requested.

Respectfully submitted

A handwritten signature in black ink, appearing to read "Michael F. Hay", with a stylized flourish at the end.

Michael F. Hay

Reg. No. 54,155

Dated: April 5, 2007

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Appendix A: Pending Claims

1-3. (Canceled)

4. (Previously presented) A process for controlling the speed of a traveling block of a well workover rig, comprising:

determining the speed of the traveling block, the position of the traveling block within a traveling range, and the weight on the traveling block, wherein the weight of the traveling block is measured by a weight sensing device;

comparing the speed of the traveling block to a maximum velocity value, wherein the maximum velocity value is determined as a function of the measured weight on the traveling block and wherein the maximum velocity value in an upper slow down zone of the traveling range of the traveling block is lower than the maximum velocity value at a point immediately below the upper slow down range, the length of the upper slow down zone being proportional to the momentum of the traveling block; and

adjusting the speed of the traveling block so as to maintain its speed at or below the maximum velocity value.

5. (Original) The process of claim 4, wherein the speed of the traveling block is adjusted by slowing down the speed of the engine controlling the traveling block.

6. (Original) The process of claim 4, wherein an alarm is sounded when the speed of the traveling block exceeds the maximum velocity value.

7. (Canceled)

8. (Previously presented) The process of claim 4, wherein the maximum velocity value in the upper slow down zone continually decreases from the bottom of the zone to the top of the zone.

9. (Canceled)

10. (Previously Presented) The process of claim 4, wherein the maximum velocity value in a lower slow down zone of the traveling range of the traveling block is lower than the maximum velocity value at a point immediately above the lower slow down zone.
11. (Original) The process of claim 10, wherein the maximum velocity value in the lower slow down zone continually decreases from the top of the zone to the bottom of the zone.
12. (Original) The process of claim 10, wherein the length of the lower slow down zone is proportional to the momentum of the traveling block.
13. (Original) The process of claim 4, further comprising the steps of sensing when the traveling block has reached an upper most position and stopping the movement of the traveling block when the upper most position is reached.
14. (Original) The process of claim 13, wherein the sensing of the upper most position step is accomplished with a metal detector sensing the traveling block.
15. (Original) The process of claim 4, wherein the traveling block speed is slowed using a pneumatic brake attached to a proportional valve.
16. (Original) The process of claim 4, wherein the traveling range has an upper limit and a lower limit, the process further comprising logging whether or not the traveling block reaches either the upper limit or the lower limit.
17. (Withdrawn) A process for controlling the momentum of a traveling block comprising:
 - determining the speed of the traveling block, the position of the traveling block with a traveling range, and the weight on the traveling block;
 - calculating the momentum of the traveling block;
 - comparing the momentum of the traveling block to a maximum momentum value; and

adjusting the speed of the traveling block so as to maintain its speed at or below the maximum velocity value.

18. (Withdrawn) The process of claim 17, wherein the speed of the traveling block is adjusted by slowing down the speed of the engine controlling the traveling block.

19. (Withdrawn) The process of claim 17, wherein an alarm is sounded when the speed of the traveling block exceeds the maximum momentum value.

20. (Withdrawn) The process of claim 17, wherein the maximum momentum value in an upper slow down zone of the traveling range of the traveling block is lower than the maximum momentum value at a point immediately below the upper slow down range.

21. (Withdrawn) The process of claim 20, wherein the maximum momentum value in the upper slow down zone continually decreases from the bottom of the zone to the top of the zone.

22. (Withdrawn) The process of claim 20, wherein the length upper slow down zone is proportional to the momentum of the traveling block.

23. (Withdrawn) The process of claim 17, wherein the maximum momentum value in a lower slow down zone of the traveling range of the traveling block is lower than the maximum momentum value at a point immediately above the upper slow down range.

24. (Withdrawn) The process of claim 23, wherein the maximum momentum value in the lower slow down zone continually decreases from the top of the zone to the bottom of the zone.

25. (Withdrawn) The process of claim 23, wherein the length of the lower slow down zone is proportional to the momentum of the traveling block.

26. (Withdrawn) The process of claim 17, wherein the traveling block speed is slowed using a pneumatic brake attached to a proportional valve.

27. (Withdrawn) The process of claim 17, wherein the traveling range has an upper limit and a lower limit, the process further comprising logging whether or not the traveling block reaches either the upper limit or the lower limit.

Appendix B: Evidence

1. Richardson, U.S. Patent No. 4,545,017
2. Ruddy, U.S. Patent No. 6,527,130
3. *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-58 (Fed Cir. 1998)
4. *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000)
5. *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002)

Appendix C: Related Proceedings

None.

LEXSEE 277 F3D 1338



Caution

As of: Apr 05, 2007

IN RE SANG SU LEE

00-1158

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

277 F.3d 1338; 2002 U.S. App. LEXIS 855; 61 U.S.P.Q.2D (BNA) 1430

January 18, 2002, Decided

PRIOR HISTORY: [**1] Appealed from: Patent & Trademark Office Board of Patent Appeals and Interferences. (Serial No. 07/631,240).

DISPOSITION: Vacated and remanded.

CASE SUMMARY:

PROCEDURAL POSTURE: Appellant inventor appealed the decision of the United States Board of Patent Appeals and Interferences (Board) rejecting all of the claims of the inventor's patent application that was directed to a method of automatically displaying the functions of a video display device and demonstrating how to select and adjust the functions in order to facilitate response by the user.

OVERVIEW: The patent examiner had rejected the inventor's claims on the ground of obviousness. In its decision, the Board rejected the need for any specific hint or suggestion in a particular reference to support the combination of two cited references. It held that it was not necessary to present a source of a teaching, suggestion, or motivation to combine these references or their teachings. The court of appeals found that the "common knowledge and common sense" on which the Board relied in rejecting the inventor's application were not the specialized knowledge and expertise contemplated by the Administrative Procedure Act (APA). Conclusory statements such as those provided did not fulfill the agency's obligation. The Board's analysis of the invention did not comport with either the legal requirements for determination of obviousness or with the requirements of the APA that the agency tribunal set forth the findings and expla-

nations needed for reasoned decisionmaking. Remand for these purposes was required. The court declined to consider alternative grounds that might have supported the Board's decision, because they were not relied upon in the Board's decision.

OUTCOME: The court of appeals vacated the Board's decision, and remanded for further proceedings.

LexisNexis(R) Headnotes

Administrative Law > Judicial Review > Standards of Review > General Overview

[HN1] Tribunals of the United States Patent and Trademark Office are governed by the Administrative Procedure Act, and their rulings receive the same judicial deference as do tribunals of other administrative agencies.

Administrative Law > Judicial Review > Standards of Review > General Overview

[HN2] See 5 U.S.C.S. § 706(2).

Administrative Law > Agency Adjudication > Decisions > General Overview

Administrative Law > Judicial Review > Standards of Review > General Overview

Environmental Law > Litigation & Administrative Proceedings > Judicial Review

[HN3] For judicial review to be meaningfully achieved within the strictures of 5 U.S.C.S. § 706(2), the agency tribunal must present a full and reasoned explanation of

its decision. The agency tribunal must set forth its findings and the grounds thereof, as supported by the agency record, and explain its application of the law to the found facts. The Administrative Procedure Act (APA), which governs the proceedings of administrative agencies and related judicial review, establishes a scheme of "reasoned decisionmaking." Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational. This standard requires that the agency not only have reached a sound decision, but have articulated the reasons for that decision. The reviewing court is thus enabled to perform meaningful review within the strictures of the APA, for the court will have a basis on which to determine whether the decision was based on the relevant factors and whether there has been a clear error of judgment.

Administrative Law > Judicial Review > Administrative Record > General Overview

Patent Law > Inequitable Conduct > General Overview

Patent Law > U.S. Patent & Trademark Office Proceedings > Interferences > General Overview

[HN4] Judicial review of a United States Board of Patent Appeals and Interferences decision denying an application for a patent is founded on the obligation of the agency to make the necessary findings and to provide an administrative record showing the evidence on which the findings are based, accompanied by the agency's reasoning in reaching its conclusions.

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN5] As applied to the determination of patentability vel non when the issue is obviousness, it is fundamental that rejections under 35 U.S.C.S. § 103 must be based on evidence comprehended by the language of that section.

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Evidence & Procedure > General Overview

[HN6] The patent examination process centers on prior art and the analysis thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. The central question is whether there is reason to combine the references, a question of

fact drawing on the Graham factors. The factual inquiry whether to combine references must be thorough and searching. It must be based on objective evidence of record. This precedent cannot be dispensed with.

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN7] In the context of obviousness in patent applications, even when the level of skill in the art is high, the United States Board of Patent Appeals and Interferences must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Evidence & Procedure > Fact & Law Issues

[HN8] In considering obviousness in patent applications, the factual question of motivation is material to patentability, and cannot be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to a combination of references, simply to use that which the inventor taught against its teacher. Thus the United States Board of Patent Appeals and Interferences must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

Administrative Law > Judicial Review > Standards of Review > General Overview

[HN9] Deferential judicial review under the Administrative Procedure Act does not relieve the agency of its obligation to develop an evidentiary basis for its findings. To the contrary, the Administrative Procedure Act reinforces this obligation. The agency must examine the relevant data and articulate a satisfactory explanation for its action, including a rational connection between the facts found and the choice made.

Administrative Law > Judicial Review > Standards of Review > Arbitrary & Capricious Review***Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview***

[HN10] Omission of a relevant factor required by precedent is both legal error and arbitrary agency action.

Administrative Law > Judicial Review > Standards of Review > Substantial Evidence

[HN11] Reasoned findings are critical to the performance of agency functions and judicial reliance on agency competence.

Patent Law > Inequitable Conduct > General Overview***Patent Law > Jurisdiction & Review > Standards of Review > General Overview******Patent Law > U.S. Patent & Trademark Office Proceedings > Interferences > General Overview***

[HN12] Deficiencies of the cited references cannot be remedied by the United States Board of Patent Appeals and Interferences' general conclusions about what is "basic knowledge" or "common sense." The board's findings must extend to all material facts and must be documented on the record, lest the haze of so-called expertise acquire insulation from accountability. Common knowledge and common sense, even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority. Because reasoned decision-making demands it, and because the systemic consequences of any other approach are unacceptable, the tribunal must be required to apply in fact the clearly understood legal standards that it enunciates in principle.

Patent Law > Claims & Specifications > Enablement Requirement > General Overview***Patent Law > Jurisdiction & Review > Subject Matter Jurisdiction > Appeals******Patent Law > Nonobviousness > Elements & Tests > Prior Art***

[HN13] In resolving the issue of obviousness in patent applications, common knowledge and common sense may be applied to analysis of the evidence.

Patent Law > Subject Matter > General Overview

[HN14] Determination of patentability must be based on evidence.

Administrative Law > Judicial Review > General Overview***Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard******Patent Law > U.S. Patent & Trademark Office Proceedings > General Overview***

[HN15] The patent examiner and the United States Board of Patent Appeals and Interferences are deemed to have experience in the field of the invention; however, this experience, insofar as applied to the determination of patentability, must be applied from the viewpoint of the person having ordinary skill in the art to which said subject matter pertains. In finding the relevant facts, in assessing the significance of the prior art, and in making the ultimate determination of the issue of obviousness, the examiner and the board are presumed to act from this viewpoint. Thus when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record. The failure to do so is not consistent with either effective administrative procedure or effective judicial review. The board cannot rely on conclusory statements when dealing with particular combinations of prior art and specific claims, but must set forth the rationale on which it relies.

Administrative Law > Judicial Review > Reviewability > Standing***Civil Procedure > Appeals > Reviewability > Adverse Determinations******Environmental Law > Litigation & Administrative Proceedings > Judicial Review***

[HN16] Courts may not accept appellate counsel's post hoc rationalization for agency action. Consideration by the appellate tribunal of new agency justifications deprives the aggrieved party of a fair opportunity to support its position; thus review of an administrative decision must be made on the grounds relied on by the agency. If those grounds are inadequate or improper, the court is powerless to affirm the administrative action by substituting what it considers to be a more adequate or proper basis. If a reviewing court agrees that the agency misinterpreted the law, it will set aside the agency's action and remand the case--even though the agency (like a new jury after a mistrial) might later, in the exercise of its lawful discretion, reach the same result for a different reason.

Administrative Law > Judicial Review > Reviewability > Factual Determinations***Administrative Law > Judicial Review > Standards of Review > General Overview******Governments > Courts > Judicial Precedents***

[HN17] Sound administrative procedure requires that the agency apply the law in accordance with statute and

precedent. The agency tribunal must make findings of relevant facts, and present its reasoning in sufficient detail that the court may conduct meaningful review of the agency action.

Administrative Law > Judicial Review > General Overview

Governments > Courts > Judicial Precedents

[HN18] When agency reasoning is so crippled as to be unlawful, the court's practice is to vacate the agency's order, while when agency action is potentially lawful but insufficiently or inappropriately explained, the court frequently remands for further explanation (including discussion of the relevant factors and precedents) while withholding judgment on the lawfulness of the agency's proposed action.

COUNSEL: Richard H. Stern, of Washington, DC, argued for Sang Su Lee. With him on the brief was Robert E. Bushnell.

Sidney O. Johnson, Jr., Associate Solicitor, of Arlington, Virginia, argued for the Director of the U.S. Patent and Trademark Office. With him on the brief were John M. Whealan, Solicitor, and Raymond T. Chen, Associate Solicitor. Of counsel were Maximilian R. Peterson and Mark Nagumo, Associate Solicitors.

JUDGES: Before NEWMAN, CLEVINGER, and DYK, Circuit Judges.

OPINION BY: NEWMAN

OPINION: [*1340] NEWMAN, Circuit Judge.

Sang-Su Lee appeals the decision of the Board of Patent Appeals and Interferences of the United States Patent and Trademark Office, rejecting all of the claims of Lee's patent application Serial No. 07/631,210 entitled "Self-Diagnosis and Sequential-Display Method of Every Function." n1 We vacate the Board's decision for failure to meet the adjudicative standards for review under the Administrative Procedure Act, and remand for further proceedings.

n1 Ex parte Lee, No. 1994-1989 (Bd. Pat. App. & Int. Aug. 30, 1994; on reconsid'n Sept. 29, 1999).

[**2]

The Prosecution Record

Mr. Lee's patent application is directed to a method of automatically displaying the functions of a video display device and demonstrating how to select and adjust the functions in order to facilitate response by the user. The display and demonstration are achieved using computer-managed electronics, including pulse-width modulation and auto-fine-tuning pulses, in accordance with procedures described in the specification. Claim 10 is representative:

10. A method for automatically displaying functions of a video display device, comprising:

determining if a demonstration mode is selected;

if said demonstration mode is selected, automatically entering a picture adjustment mode having a picture menu screen displaying a list of a plurality of picture functions; and

automatically demonstrating selection and adjustment of individual ones of said plurality of picture functions.

The examiner rejected the claims on the ground of obviousness, citing the combination of two references: United States Patent No. 4,626,892 to Nortrup, and the Thunderchopper Helicopter Operations [*1341] Handbook for a video game. The Nortrup reference describes a television [**3] set having a menu display by which the user can adjust various picture and audio functions; however, the Nortrup display does not include a demonstration of how to adjust the functions. The Thunderchopper Handbook describes the Thunderchopper game's video display as having a "demonstration mode" showing how to play the game; however, the Thunderchopper Handbook makes no mention of the adjustment of picture or audio functions. The examiner held that it would have been obvious to a person of ordinary skill to combine the teachings of these references to produce the Lee system.

Lee appealed to the Board, arguing that the Thunderchopper Handbook simply explained how to play the Thunderchopper game, and that the prior art provided no teaching or motivation or suggestion to combine this reference with Nortrup, or that such combination would produce the Lee invention. The Board held that it was not necessary to present a source of a teaching, suggestion, or motivation to combine these references or their teachings. The Board stated:

The conclusion of obviousness may be made from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or [**4] suggestion in a particular reference.

Board op. at 7. The Board did not explain the "common knowledge and common sense" on which it relied for its conclusion that "the combined teachings of Nortrup and Thunderchopper would have suggested the claimed invention to those of ordinary skill in the art."

Lee filed a request for reconsideration, to which the Board responded after five years. The Board reaffirmed its decision, stating that the Thunderchopper Handbook was "analogous art" because it was "from the same field of endeavor" as the Lee invention, and that the field of video games was "reasonably pertinent" to the problem of adjusting display functions because the Thunderchopper Handbook showed video demonstrations of the "features" of the game. On the matter of motivation to combine the Nortrup and Thunderchopper references, the Board stated that "we maintain the position that we stated in our prior decision" and that the Examiner's Answer provided "a well reasoned discussion of why there is sufficient motivation to combine the references." The Board did not state the examiner's reasoning, and review of the Examiner's Answer reveals that the examiner merely stated that both [**5] the Nortrup function menu and the Thunderchopper demonstration mode are program features and that the Thunderchopper mode "is user-friendly" and it functions as a tutorial, and that it would have been obvious to combine them.

Lee had pressed the examiner during prosecution for some teaching, suggestion, or motivation in the prior art to select and combine the references that were relied on to show obviousness. The Examiner's Answer before the Board, plus a Supplemental Answer, stated that the combination of Thunderchopper with Nortrup "would have been obvious to one of ordinary skill in the art since the demonstration mode is just a programmable feature which can be used in many different devices for providing automatic introduction by adding the proper programming software," and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial." The Board adopted the examiner's answer, stating "the examiner has provided a well reasoned discussion of these references and how the combination of these references meets the claim limitations." However, perhaps recognizing that the examiner had provided insufficient justification to [**6] [*1342] support combining the Nortrup and Thunderchopper references, the Board held, as stated

supra, that a "specific hint or suggestion" of motivation to combine was not required.

This appeal followed.

Judicial Review

[HN1] Tribunals of the PTO are governed by the Administrative Procedure Act, and their rulings receive the same judicial deference as do tribunals of other administrative agencies. *Dickinson v. Zurko*, 527 U.S. 150, 50 U.S.P.Q.2D (BNA) 1930, 144 L. Ed. 2d 143, 119 S. Ct. 1816 (1999). Thus on appeal we review a PTO Board's findings and conclusions in accordance with the following criteria:

5 U.S.C. § 706(2) [HN2] The reviewing court shall--

(2) hold unlawful and set aside agency actions, findings, and conclusions found to be--

(A) arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law;

(E) unsupported by substantial evidence in a case subject to sections 556 and 557 of this title or otherwise reviewed on the record of an agency hearing provided by statute;

[HN3] For judicial review to be meaningfully achieved within these strictures, the agency tribunal must present a full and reasoned [**7] explanation of its decision. The agency tribunal must set forth its findings and the grounds thereof, as supported by the agency record, and explain its application of the law to the found facts. The Court has often explained:

The Administrative Procedure Act, which governs the proceedings of administrative agencies and related judicial review, establishes a scheme of "reasoned decisionmaking." Not only must an agency's decreed result be within the scope of its lawful authority, but the process by which it reaches that result must be logical and rational.

Allentown Mack Sales and Service, Inc. v. National Labor Relations Bd., 522 U.S. 359, 374, 139 L. Ed. 2d 797, 118 S. Ct. 818 (1998) (citation omitted). This standard requires that the agency not only have reached a sound decision, but have articulated the reasons for that decision. The reviewing court is thus enabled to perform meaningful review within the strictures of the APA, for the court will have a basis on which to determine "whether the decision was based on the relevant factors and whether there has been a clear error of judgment." *Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402, 416, 28 L. Ed. 2d 136, 91 S. Ct. 814 (1971). [**8] [HN4] Judicial review of a Board decision denying an application for patent is thus founded on the obligation of the agency to make the necessary findings and to provide an administrative record showing the evidence on which the findings are based, accompanied by the agency's reasoning in reaching its conclusions. See *In re Zurko*, 258 F.3d 1379, 1386, 59 U.S.P.Q.2D (BNA) 1693, 1697 (Fed. Cir. 2001) (review is on the administrative record); *In re Gartside*, 203 F.3d 1305, 1314, 53 U.S.P.Q.2D (BNA) 1769, 1774 (Fed. Cir. 2000) (Board decision "must be justified within the four corners of the record").

[HN5] As applied to the determination of patentability vel non when the issue is obviousness, "it is fundamental that rejections under 35 U.S.C. § 103 must be based on evidence comprehended by the language of that section." *In re Grasselli*, 713 F.2d 731, 739, 218 U.S.P.Q. (BNA) 769, 775 (Fed. Cir. 1983). The essential factual evidence on the issue of obviousness is set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 U.S.P.Q. (BNA) 459, 467, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966) and extensive ensuing precedent. [HN6] The patent examination [*1343] process [**9] centers on prior art and the analysis thereof. When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. See, e.g., *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 U.S.P.Q.2D (BNA) 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the Graham factors).

"The factual inquiry whether to combine references must be thorough and searching." *Id.* It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. See, e.g., *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2D (BNA) 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'" (quoting *C.R. Bard, Inc. v. M3*

Systems, Inc., 157 F.3d 1340, 1352, 48 U.S.P.Q.2D (BNA) 1225, 1232 (Fed. Cir. 1998)); [**10] *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2D (BNA) 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 U.S.P.Q.2D (BNA) 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2D (BNA) 1596, 1600 (Fed. Cir. 1988) ("teachings of references can be combined only if there is some suggestion or incentive to do so.") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 U.S.P.Q. (BNA) 929, 933 (Fed. Cir. 1984)).

The need for specificity pervades this authority. See, e.g., *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2D (BNA) 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, [**11] would have selected these components for combination in the manner claimed"); *In re Rouffet*, 149 F.3d 1350, 1359, 47 U.S.P.Q.2D (BNA) 1453, 1459 (Fed. Cir. 1998) [HN7] ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious."); *In re Fritch*, 972 F.2d 1260, 1265, 23 U.S.P.Q.2D (BNA) 1780, 1783 (Fed. Cir. 1992) (the examiner can satisfy the burden of showing obviousness of the combination "only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references").

With respect to Lee's application, neither the examiner nor the Board adequately supported the selection and combination of the Nortrup and Thunderchopper references to render obvious that which Lee described. The examiner's conclusory statements that "the demonstration mode [**12] is just a programmable feature which can be used in many different devices for providing automatic introduction by adding the proper programming software" and that "another motivation would be that the automatic demonstration mode is user friendly and it functions as a tutorial" do not adequately address the issue of motivation to combine. [HN8] This factual question [*1344] of motivation is material to

patentability, and could not be resolved on subjective belief and unknown authority. It is improper, in determining whether a person of ordinary skill would have been led to this combination of references, simply to "[use] that which the inventor taught against its teacher." *W.L. Gore v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. (BNA) 303, 312-13 (Fed. Cir. 1983). Thus the Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion.

[HN9] Deferential judicial review under the Administrative Procedure Act does not relieve the agency of its obligation to develop an evidentiary basis for its findings. To the contrary, the Administrative Procedure Act reinforces [**13] this obligation. See, e.g., *Motor Vehicle Manufacturers Ass'n v. State Farm Mutual Automobile Ins. Co.*, 463 U.S. 29, 43, 77 L. Ed. 2d 443, 103 S. Ct. 2856 (1983) ("the agency must examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'") (quoting *Burlington Truck Lines v. United States*, 371 U.S. 156, 168, 9 L. Ed. 2d 207, 83 S. Ct. 239 (1962)); *Securities & Exchange Comm'n v. Chenery Corp.*, 318 U.S. 80, 94, 87 L. Ed. 626, 63 S. Ct. 454 (1943) ("The orderly function of the process of review requires that the grounds upon which the administrative agency acted are clearly disclosed and adequately sustained.").

In its decision on Lee's patent application, the Board rejected the need for "any specific hint or suggestion in a particular reference" to support the combination of the Nortrup and Thunderchopper references. [HN10] Omission of a relevant factor required by precedent is both legal error and arbitrary agency action. See *Motor Vehicle Manufacturers*, 463 U.S. at 43 ("an agency rule would be arbitrary and [**14] capricious if the agency . . . entirely failed to consider an important aspect of the problem"); *Mullins v. Department of Energy*, 50 F.3d 990, 992 (Fed. Cir. 1995) ("It is well established that agencies have a duty to provide reviewing courts with a sufficient explanation for their decisions so that those decisions may be judged against the relevant statutory standards, and that failure to provide such an explanation is grounds for striking down the action."). As discussed in *National Labor Relations Bd. v. Ashkenazy Property Mgt. Corp.*, 817 F.2d 74, 75 (9th Cir. 1987), an agency is "not free to refuse to follow circuit precedent."

The foundation of the principle of judicial deference to the rulings of agency tribunals is that the tribunal has specialized knowledge and expertise, such that when reasoned findings are made, a reviewing court may confidently defer to the agency's application of its knowledge in its area of expertise. [HN11] Reasoned findings

are critical to the performance of agency functions and judicial reliance on agency competence. See *Baltimore and Ohio R. R. Co. v. Aberdeen & Rockfish R. R. Co.*, 393 U.S. 87, 91-92, 21 L. Ed. 2d 219, 89 S. Ct. 280 (1968) [**15] (absent reasoned findings based on substantial evidence effective review would become lost "in the haze of so-called expertise"). The "common knowledge and common sense" on which the Board relied in rejecting Lee's application are not the specialized knowledge and expertise contemplated by the Administrative Procedure Act. Conclusory statements such as those here provided do not fulfill the agency's obligation. This court explained in *Zurko*, 258 F.3d at 1385, 59 U.S.P.Q.2D (BNA) at 1697, that [HN12] "deficiencies of the cited references cannot be remedied by the Board's general conclusions about what is 'basic knowledge' or 'common sense.'" The [**1345] Board's findings must extend to all material facts and must be documented on the record, lest the "haze of so-called expertise" acquire insulation from accountability. "Common knowledge and common sense," even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority. See *Allentown Mack*, 522 U.S. at 376 ("Because reasoned decisionmaking demands it, and because the systemic consequences of any other approach are unacceptable, the Board must be required to apply in fact the [**16] clearly understood legal standards that it enunciates in principle . . .")

The case on which the Board relies for its departure from precedent, *In re Bozek*, 57 C.C.P.A. 713, 416 F.2d 1385, 163 U.S.P.Q. (BNA) 545 (CCPA 1969), indeed mentions "common knowledge and common sense," the CCPA stating that the phrase was used by the Solicitor to support the Board's conclusion of obviousness based on evidence in the prior art. Bozek did not hold that common knowledge and common sense are a substitute for evidence, but only that they [HN13] may be applied to analysis of the evidence. Bozek did not hold that objective analysis, proper authority, and reasoned findings can be omitted from Board decisions. Nor does Bozek, after thirty-two years of isolation, outweigh the dozens of rulings of the Federal Circuit and the Court of Customs and Patent Appeals that [HN14] determination of patentability must be based on evidence. This court has remarked, in *Smiths Industries Medical Systems, Inc. v. Vital Signs, Inc.*, 183 F.3d 1347, 1356, 51 U.S.P.Q.2D (BNA) 1415, 1421 (Fed. Cir. 1999), that Bozek's reference to common knowledge "does not in and of itself make it so" absent evidence [**17] of such knowledge.

The determination of patentability on the ground of unobviousness is ultimately one of judgment. In furtherance of the judgmental process, the patent examination procedure serves both to find, and to place on the official record, that which has been considered with respect to

patentability. [HN15] The patent examiner and the Board are deemed to have experience in the field of the invention; however, this experience, insofar as applied to the determination of patentability, must be applied from the viewpoint of "the person having ordinary skill in the art to which said subject matter pertains," the words of section 103. In finding the relevant facts, in assessing the significance of the prior art, and in making the ultimate determination of the issue of obviousness, the examiner and the Board are presumed to act from this viewpoint. Thus when they rely on what they assert to be general knowledge to negate patentability, that knowledge must be articulated and placed on the record. The failure to do so is not consistent with either effective administrative procedure or effective judicial review. The board cannot rely on conclusory statements when dealing with particular combinations [**18] of prior art and specific claims, but must set forth the rationale on which it relies.

Alternative Grounds

At oral argument the PTO Solicitor proposed alternative grounds on which this court might affirm the Board's decision. However, as stated in *Burlington Truck Lines, Inc. v. United States*, 371 U.S. 156, 168, 9 L. Ed. 2d 207, 83 S. Ct. 239 (1962), [HN16] "courts may not accept appellate counsel's post hoc rationalization for agency action." Consideration by the appellate tribunal of new agency justifications deprives the aggrieved party of a fair opportunity to support its position; thus review of an administrative decision must be made on the grounds relied on by the agency. "If those grounds are inadequate or improper, the court is powerless to affirm the administrative action by substituting what it considers [*1346] to be a more adequate or proper basis." *Securities & Exchange Comm'n v. Chenery Corp.*, 332 U.S. 194, 196, 91 L. Ed. 1995, 67 S. Ct. 1575 (1947). As reiterated in *Federal Election Comm'n v. Akins*, 524 U.S. 11, 25, 118 S. Ct. 1777, 141 L. Ed. 2d 10 (1998), "If a reviewing court agrees that the agency misinterpreted the

law, it will set aside the [**19] agency's action and remand the case -- even though the agency (like a new jury after a mistrial) might later, in the exercise of its lawful discretion, reach the same result for a different reason." Thus we decline to consider alternative grounds that might support the Board's decision.

Further Proceedings

[HN17] Sound administrative procedure requires that the agency apply the law in accordance with statute and precedent. The agency tribunal must make findings of relevant facts, and present its reasoning in sufficient detail that the court may conduct meaningful review of the agency action. In *Radio-Television News Directors Ass'n v. FCC*, 337 U.S. App. D.C. 292, 184 F.3d 872 (D.C. Cir. 1999) the court discussed the "fine line between agency reasoning that is 'so crippled as to be unlawful' and action that is potentially lawful but insufficiently or inappropriately explained," quoting from *Checkosky v. Securities & Exch. Comm'n*, 306 U.S. App. D.C. 144, 23 F.3d 452, 464 (D.C. Cir. 1994); the court explained that [HN18] "in the former circumstance, the court's practice is to vacate the agency's order, while in the latter the court frequently remands for further explanation [**20] (including discussion of the relevant factors and precedents) while withholding judgment on the lawfulness of the agency's proposed action." 184 F.3d at 888. In this case the Board's analysis of the Lee invention does not comport with either the legal requirements for determination of obviousness or with the requirements of the Administrative Procedure Act that the agency tribunal set forth the findings and explanations needed for "reasoned decisionmaking." Remand for these purposes is required. See *Overton Park*, 401 U.S. at 420-221 (remanding for further proceedings appropriate to the administrative process).

VACATED AND REMANDED

LEXSEE 217 F3D 1365



Caution

As of: Apr 05, 2007

IN RE WERNER KOTZAB

99-1231

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

217 F.3d 1365; 2000 U.S. App. LEXIS 15504; 55 U.S.P.Q.2D (BNA) 1313

June 30, 2000, Decided

PRIOR HISTORY: [**1] Appealed from: U.S. Patent and Trademark Office Board of Patent Appeals and Interferences. (Reexamination No. 90/004,441).

DISPOSITION: REVERSED.

CASE SUMMARY:

PROCEDURAL POSTURE: Appellant inventor appealed from the final decision of the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences, which held appellant's claims unpatentable for obviousness under 35 U.S.C.S. § 103(a).

OVERVIEW: Appellant's invention involved an injection molding method for forming plastic articles. After a patent issued to appellant, a third party filed a request for reexamination. The U.S. Patent and Trademark Office Board of Patent Appeals determined that appellant's claims were unpatentable for obviousness under 35 U.S.C.S. § 103(a). On appeal, the court reversed the decision. There was not substantial evidence to support the board's finding of fact that a prior patent expressly taught that "one sensor" could be used to control a plurality of valves, and there was not substantial evidence of record, either expressly or implicitly, to modify the teachings of the prior patent to obtain a system in which one sensor controls a plurality of valves.

OUTCOME: Decision was reversed because the board erred in finding appellant's claims unpatentable for obviousness.

LexisNexis(R) Headnotes

Patent Law > Nonobviousness > Elements & Tests > Claimed Invention as a Whole

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

[HN1] A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. 35 U.S.C.S. § 103(a).

Patent Law > Jurisdiction & Review > Standards of Review > General Overview

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN2] The ultimate determination of whether an invention would have been obvious under 35 U.S.C.S. § 103(a) is a legal conclusion based on underlying findings of fact.

Civil Procedure > Appeals > Standards of Review > De Novo Review

Patent Law > Jurisdiction & Review > Standards of Review > De Novo Review

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN3] The appellate court reviews the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences' ultimate determination of obviousness de novo.

Patent Law > Jurisdiction & Review > Standards of Review > Substantial Evidence

[HN4] The appellate court reviews the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences' underlying factual findings for substantial evidence.

Patent Law > Jurisdiction & Review > Standards of Review > General Overview

[HN5] Substantial evidence is something less than the weight of the evidence but more than a mere scintilla of evidence.

Patent Law > Jurisdiction & Review > Standards of Review > General Overview

[HN6] In reviewing the record for substantial evidence, the appellate court must take into account evidence that both justifies and detracts from the factual determinations.

Patent Law > Jurisdiction & Review > Standards of Review > General Overview

[HN7] The possibility of drawing two inconsistent conclusions from the evidence does not prevent the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences' findings from being supported by substantial evidence.

Administrative Law > Judicial Review > Reviewability > Questions of Law***Patent Law > Jurisdiction & Review > Standards of Review > General Overview***

[HN8] If a reasonable mind might accept the evidence as adequate to support the factual conclusions drawn by the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences, then the appellate court must uphold the Board's determination.

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview***Patent Law > Nonobviousness > Elements & Tests > Hindsight******Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard***

[HN9] A critical step in analyzing the patentability of claims pursuant to 35 U.S.C.S. § 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the

prior art references and the then-accepted wisdom in the field. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher.

Patent Law > Nonobviousness > Elements & Tests > Claimed Invention as a Whole***Patent Law > Nonobviousness > Elements & Tests > Prior Art******Patent Law > Nonobviousness > Evidence & Procedure > General Overview***

[HN10] Most if not all inventions arise from a combination of old elements. Thus, every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant.

Patent Law > Nonobviousness > Elements & Tests > General Overview

[HN11] Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. The motivation, suggestion, or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. In addition, the teaching, motivation, or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art.

Patent Law > Claims & Specifications > Enablement Requirement > General Overview***Patent Law > Jurisdiction & Review > Standards of Review > General Overview***

[HN12] Whether the U.S. Patent and Trademark Office Board of Patent Appeals and Interferences relies on an express or an implicit showing, it must provide particular findings related thereto. Broad conclusory statements standing alone are not "evidence."

COUNSEL: Robert F. I. Conte, Lee, Mann, Smith, McWilliams, Sweeney & Ohlson, of Chicago, Illinois, argued for appellant. Of counsel were Thomas Eugene Smith and James B. Conte.

Mark Nagumo, Associate Solicitor, U.S. Patent and Trademark Office, of Arlington, Virginia, argued for the appellee. With him on the brief were Albin F. Drost, Acting Solicitor, John M. Whealan, Acting Deputy Solicitor, and Stephen Walsh, Associate Solicitor.

JUDGES: Before LOURIE, GAJARSA, and LINN, Circuit Judges.

OPINION BY: LINN

OPINION: [*1367] LINN, Circuit Judge.

DECISION

Werner Kotzab appeals from the final decision of the Board of Patent Appeals and Interferences ("Board") holding claims 1-10 in reexamination number 90/004,441 unpatentable for obviousness under 35 U.S.C. § 103(a). See *Ex Parte Kotzab*, Paper No. 17 (BPAI July 15, 1998). This case was submitted for our decision following oral argument on April 4, 2000. Because certain of the Board's key factual findings relating to its obviousness analysis are not supported by substantial evidence, and [**2] because the Board erred in concluding that the claims would have been obvious as a matter of law, we reverse.

BACKGROUND

A. The Invention

The invention involves an injection molding method for forming plastic articles. In such methods, the temperature of the mold must be controlled so that the plastic can harden uniformly throughout the mold. Kotzab was confronted with the problem of providing optimal temperature control for an injection molding method to ensure the quality of the final product on the one hand, and achieving optimally short molding cycle times on the other hand. He arrived at a solution which is embodied in claim 1 of the reexamination as follows:

1. An improved method of controlling the temperature of an injection mold by pressure feeding molding material into a mold recess of an injection mold by an extruder, curing the material in the mold, and removing molded material from the mold, said pressure feeding, curing, and removing being a molding cycle of recurring molding cycles and said recurring

molding cycles having at least a first molding cycle and a second molding cycle,

comparing a preset nominal temperature to an actual temperature measured [**3] by at least one temperature sensor during said first molding cycle and said second molding cycle and supplying an amount of a temperature controlling medium to the first molding cycle and the second molding cycle, said amount of temperature controlling medium being dependent on the deviation between the actual temperature measured and the desired preset nominal temperature, the improvement comprising:

controlling, via a single sensor, a plurality of flow control valves for the temperature [*1368] controlling medium to provide impulse temperature control medium to the first and second molding cycles,

determining empirically or by calculation a quantitative spacial distribution of temperature controlling medium needed to obtain said desired preset nominal temperature during at least the first molding cycle and the second molding cycle and determining empirically or by calculation the conduits needed to be utilized to obtain the desired preset nominal temperature during at least the first molding cycle and the second molding cycle,

comparing said desired preset nominal temperature to said actual temperature, at least once during the first molding cycle and the second molding cycle [**4] at a certain point in time being the same for each said molding cycle, such that said comparison made during said first cycle is synchronized with said comparison made during said second subsequent molding cycle, and said plurality of flow control valves are triggered during each said cycle to provide said impulse control medium, and said triggering being dependent on the deviation of temperature determined for each said comparison and also being dependent on a stored profile of said quantitative spacial distribution of the temperature controlling medium.

J.A. at 18-19.

Claim 3, which depends from claim 1, adds the following further limitation: "wherein a flow measuring turbine is associated with each flow control valve to detect the actual flow in each cycle and wherein a proportioning of a cooling or heating medium is effected in dependence on a comparison of a nominal flow to the actual flow." *Id.* at 19.

Claim 10, which depends from claim 3, additionally provides that "the rotation of said measuring turbine is transferred into pulses, so that the nominal flow [of the temperature controlling medium] can be fixed by the presetting of a corresponding number of pulses." [**5] *Id.* at 20.

B. The Reexamination Proceeding

U.S. Patent 5,427,720 ("the '720 patent") issued to Kotzab on June 27, 1995. A third party filed a request for reexamination on November 4, 1996. The reexamination was granted and assigned control no. 90/004,441. The amended claims were finally rejected by the Examiner, and Kotzab appealed the rejections to the Board. On July 15, 1998, the Board affirmed the Examiner's rejection of the claims for essentially the reasons expressed in the Examiner's Answer. The Board did, however, provide its own additional comments primarily for emphasis.

Specifically, the Board agreed with the Examiner that WO 92/08598 ("Evans") discloses a process of controlling the temperature of an injection mold by using a sensor to control the pulsing of a temperature control medium through the mold. Moreover, the Board found, as explained by the Examiner, that Evans discloses in a less preferred embodiment, using only one temperature measurement to control the coolant pulses rather than an average temperature measurement. See Evans application, p.6, ll. 17-23.

In addition, the Board found that Evans discloses that "the optimum timing of the cooling flow [**6] can be selected in accordance with the known temperature of the mould." *Id.* at ll. 6-8. Furthermore, the Board found that a prior art promotional article discloses that manipulation of the geometry and layout of the cooling segment provides for the greatest improvement in molding cycle. See Horst Wieder, Understanding the pulse modulated mold temperature control method, (CITO Products, Inc., WI.) 1987, at p. 1, col. 2, ll. 13-16. And, the Board determined that a May 1984 prior art article indicates that it was known to establish a cooling regime before the mold is produced, and that the determination of the cooling regime includes the number and location of the cooling conduits, as well as the volume of the coolant flow. Thus, the Board concluded that the evidence of record

indicates that it [*1369] was known in the art to utilize empirical data to design the mold and the distribution of cooling channels in that mold. In view of the foregoing, the Board found that the empirical determination of the necessary spacial distribution of the length of the cooling pulses needed for delivering the appropriate coolant is disclosed by Evans or was known at the time the invention was made. [**7] Consequently, the Board affirmed the Examiner's rejection of claims 1, 2, and 4-9 under 35 U.S.C. § 103(a) as being unpatentable over Evans.

The Board made additional findings related to claims 3 and 10 in determining that they were also unpatentable under 35 U.S.C. § 103(a) over Evans in view of certain secondary references.

Kotzab filed a request for reconsideration, which the Board denied on November 24, 1998. In that decision, the Board reiterated agreement with the Examiner that it would have been obvious for one of ordinary skill in the art to utilize only one temperature measurement to control the coolant pulses in light of the Evans disclosure. Kotzab timely appealed the Board's decision to this court. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(4)(A) (1994).

DISCUSSION

A. Standard of Review

[HN1] A claimed invention is unpatentable if the differences between it and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. See 35 U.S.C. § 103(a) (Supp. III 1997); *In re Dembiczak*, 175 F.3d 994, 998, 50 U.S.P.Q.2D (BNA) 1614, 1616 (Fed. Cir. 1999). [**8] [HN2] The ultimate determination of whether an invention would have been obvious under 35 U.S.C. § 103(a) is a legal conclusion based on underlying findings of fact. See *Dembiczak*, 175 F.3d at 998, 50 U.S.P.Q.2D (BNA) at 1616. [HN3] We review the Board's ultimate determination of obviousness de novo. See *id.* [HN4] However, we review the Board's underlying factual findings for substantial evidence. See *In re Gartside*, 203 F.3d 1305, 1316, 53 U.S.P.Q.2D (BNA) 1769, 1776 (Fed. Cir. 2000).

[HN5] Substantial evidence is something less than the weight of the evidence but more than a mere scintilla of evidence. See *id.* at 1312, 53 U.S.P.Q.2D (BNA) at 1773 (quoting *Consolidated Edison Co. v. NLRB*, 305 U.S. 197, 229-30, 83 L. Ed. 126, 59 S. Ct. 206 (1938)). [HN6] In reviewing the record for substantial evidence, we must take into account evidence that both justifies and detracts from the factual determinations. See *id.* (citing *Universal Camera Corp. v. NLRB*, 340 U.S. 474, 487-88, 95 L. Ed. 456, 71 S. Ct. 456 (1951)). [HN7] We

note that the possibility of drawing two inconsistent conclusions from the evidence does not prevent the Board's findings [**9] from being supported by substantial evidence. See *id.* [HN8] Indeed, if a reasonable mind might accept the evidence as adequate to support the factual conclusions drawn by the Board, then we must uphold the Board's determination. See *id.*

B. Analysis

[HN9] A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. See *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2D (BNA) at 1617. Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher." *Id.* (quoting *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 U.S.P.Q. (BNA) 303, 313 (Fed. Cir. 1983)).

[HN10] Most if not all inventions arise from a combination of old elements. See *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2D (BNA) 1453, 1457 (Fed. Cir. 1998). Thus, [*1370] every [**10] element of a claimed invention may often be found in the prior art. See *id.* However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See *id.* Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. See *In re Dance*, 160 F.3d 1339, 1343, 48 U.S.P.Q.2D (BNA) 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. (BNA) 1125, 1127 (Fed. Cir. 1984). [HN11] Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See *B.F. Goodrich Co. v. Aircraft Braking Sys. Corp.*, 72 F.3d 1577, 1582, 37 U.S.P.Q.2D (BNA) 1314, 1318 (Fed. Cir. 1996).

The motivation, suggestion or teaching may come explicitly from statements in the prior art, the knowledge of one of ordinary skill in the art, or, in some cases the nature of the problem to be solved. See *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2D (BNA) at 1617. [**11] In addition, the teaching, motivation or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. See *WMS Gaming, Inc. v. International Game Tech.*, 184 F.3d 1339, 1355, 51 U.S.P.Q.2D (BNA) 1385, 1397 (Fed. Cir. 1999). The test

for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 425, 208 U.S.P.Q. (BNA) 871, 881 (CCPA 1981) (and cases cited therein). [HN12] Whether the Board relies on an express or an implicit showing, it must provide particular findings related thereto. See *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2D (BNA) at 1617. Broad conclusory statements standing alone are not "evidence." *Id.*

Kotzab's primary argument that the Board erred in holding claims 1-10 unpatentable under 35 U.S.C. § 103(a) over Evans, or Evans in view of secondary references, is that Evans does not teach or suggest the use of a single temperature sensor to control a plurality of flow control valves. We agree.

As noted previously, [**12] the Board adopted the Examiner's reasoning in upholding the rejection of the claims and added further comments. None of the Board's comments relate to the issue of Evans teaching or suggesting the use of one sensor to control a number of valves regulating coolant flow to the mold. Thus, we look to the Examiner's reasons for finding this limitation to be expressly taught or suggested in Evans.

The Examiner cites Evans for teaching that "one system constructed and operated according to the invention may be used to control a number of valves." Evans application, p. 19, ll. 6-8 (emphasis added). In view of this disclosure only, the Examiner concluded that Evans teaches the use of one sensor to control a number of valves. This conclusion must necessarily rest on the unstated premise by the Examiner that "one system" is equal to "one sensor."

But the Board's decision, adopting the Examiner's premise, lacks the necessary substantial evidence to support a rejection of Kotzab's claims. Specifically, there is not substantial evidence to show that "one system" is the same thing as "one sensor." The words "sensor" and "probe" are used throughout Evans to refer to the device that [**13] measures the mold temperature. Evans uses the word "signal" to refer to the response generated by the measured temperature that controls the valves for coolant flow. Finally, the word "system" is used in Evans to refer to the overall temperature control system that is responsible for the valve timing for coolant flow to increase or decrease the temperature of the mold. Evans clearly never uses the term "system" as a substitute for the simple temperature measuring device it calls "sensor." And, the Board made no reference to any evidence in the record that [*1371] would equate "one system" with "one sensor."

As mentioned previously, more than a mere scintilla of evidence is necessary to support the Board's implicit conclusion that "one system" is equal to "one sensor." Based on the entirety of Evans' disclosure, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support the conclusion that "one system" means "one sensor."

The United States Patent and Trademark Office argues that because Evans teaches that a single sensor may be used to provide "the temperature measurement at a selected part of the machine," it necessarily follows that the Evans [**14] "system" discussed later may have a single sensor--and that single sensor may control more than one valve. See *id.* at p. 6, ll. 21-23; p. 19, ll. 6-8. While the test for establishing an implicit teaching, motivation, or suggestion is what the combination of these two statements of Evans would have suggested to those of ordinary skill in the art, the two statements cannot be viewed in the abstract. Rather, they must be considered in the context of the teaching of the entire reference. Further, a rejection cannot be predicated on the mere identification in Evans of individual components of claimed limitations. Rather, particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.

We do not take issue with the argument that Evans suggests the concept of using the historic temperature obtained by one temperature measurement to control coolant pulses. See *id.* at p. 5, ll. 14-22; p. 6, ll. 17-23. However, there is not substantial evidence of record to extrapolate this teaching to the multiple zone system described later in Evans. See *id.* at p. 18, l. [**15] 22 to p. 19, l. 8. In the multiple zone system, Evans describes the use of a temperature sensor and an associated flow control valve in each zone. At most, the combined teachings suggest that the historic temperature of a mold zone may be measured by one sensor, and as part of a multiple zone system where multiple valves are controlled, that one sensor measurement can be used to control the valve for that zone. Thus, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support the conclusion that where there are a plurality of control valves in a multiple zone setting, only

one temperature sensor provides the control for a plurality of valves.

Moreover, we cannot say that there is such relevant evidence as a reasonable mind might accept as adequate to support implicitly the conclusion that a skilled artisan confronted with (1) the problem noted by Kotzab, i.e., providing optimal temperature control for an injection molding method to ensure the quality of the final product on the one hand, and achieving optimally short molding cycle times on the other hand, and (2) the two statements in Evans, would have been motivated to control a plurality [**16] of valves in a multiple zone setting with only one temperature sensor.

In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we [*1372] conclude that the Board did not make out a proper *prima facie* case of obviousness in rejecting claims 1, 2, and 4-9 under 35 U.S.C. § 103(a) over Evans. Moreover, because the rejections of claims 3 and 10 rely upon the foregoing, we also conclude that the Board did not make out a proper *prima facie* case of obviousness in rejecting those claims under 35 U.S.C. § 103 [**17] (a).

CONCLUSION

For the above reasons, we conclude that there is not substantial evidence to support the Board's finding of fact that Evans expressly teaches that "one sensor" may be used to control a plurality of valves, and there is not substantial evidence of record, either expressly or implicitly, to modify the teachings of Evans to obtain a system in which one sensor controls a plurality of valves. Accordingly, we

REVERSE.

LEXSEE 149 F3D 1350



Caution

As of: Apr 05, 2007

IN RE DENIS ROUFFET, YANNICK TANGUY and FREDERIC BERTHAULT

97-1492

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

149 F.3d 1350; 1998 U.S. App. LEXIS 16414; 47 U.S.P.Q.2D (BNA) 1453

July 15, 1998, Decided

PRIOR HISTORY: [**1] Appealed from: Patent and Trademark Office Board of Patent Appeals and Interferences. (Serial No. 07/888,791).

terferences, which denied the patent applicants' application.

DISPOSITION: REVERSED.

LexisNexis(R) Headnotes

CASE SUMMARY:

PROCEDURAL POSTURE: Appellant patent applicants sought review of an order of appellee Patent and Trademark Office Board of Patent Appeals and Interferences, which affirmed a patent examiner's rejection of the patent applicants' application on grounds that it was obvious under 35 U.S.C.S. § 103(a).

OVERVIEW: The court held that the Patent and Trademark Office Board of Patent Appeals and Interferences (Board) committed reversible error when it determined that there was "motivation" to combine the elements of two prior lines of patents in a manner that rendered the patent applicants' claimed invention obvious under 35 U.S.C.S. § 103(a). The court held that the Board's naked invocation of "skill in the art" to supply a "suggestion to combine" the previous patents lines of patents cited by the Board was clearly erroneous. The fact that the Board merely observed that the level of skill in the art was very high, and did not identify the specific principle known to one of ordinary skill in the art that would have suggested the claimed combination, led the court to infer that the Board's finding of obviousness improperly relied on hindsight.

OUTCOME: The court reversed the order of the Patent and Trademark Office Board of Patent Appeals and In-

Patent Law > Nonobviousness > Evidence & Procedure > Presumptions & Proof

Patent Law > Nonobviousness > Evidence & Procedure > Prima Facie Obviousness

Patent Law > U.S. Patent & Trademark Office Proceedings > Examinations > General Overview

[HN1] To reject claims in a patent application under 35 U.S.C.S. § 103, an examiner must show an un rebutted prima facie case of obviousness. In the absence of a proper prima facie case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. On appeal to the Patent and Trademark Office Board of Patent Appeals and Interferences, an applicant can overcome a rejection by showing insufficient evidence of prima facie obviousness or by rebutting the prima facie case with evidence of secondary indicia of non-obviousness.

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Evidence & Procedure > Fact & Law Issues

[HN2] While this court reviews the Patent and Trademark Office Board of Patent Appeals and Interferences' (Board) determination in light of the entire record, an

applicant may specifically challenge an obviousness rejection by showing that the Board reached an incorrect conclusion of obviousness or that the Board based its obviousness determination on incorrect factual predicates. This court reviews the ultimate determination of obviousness as a question of law. The factual predicates underlying an obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art. This court reviews the Board's factual findings for clear error. A finding is clearly erroneous when, although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed.

Patent Law > Nonobviousness > Elements & Tests > General Overview

Patent Law > Nonobviousness > Evidence & Procedure > General Overview

[HN3] The secondary considerations are also essential components of the obviousness determination. This objective evidence of non-obviousness includes copying, long felt but unsolved need, failure of others, commercial success, unexpected results created by the claimed invention, unexpected properties of the claimed invention, licenses showing industry respect for the invention, and skepticism of skilled artisans before the invention.

Civil Procedure > Appeals > Standards of Review > Clearly Erroneous Review

Patent Law > Nonobviousness > Evidence & Procedure > Fact & Law Issues

Patent Law > Nonobviousness > Evidence & Procedure > Prima Facie Obviousness

[HN4] The Patent and Trademark Office Board of Patent Appeals and Interferences (Board) must consider all of the applicant's evidence. An observation by the Board that the examiner made a prima facie case is not improper, as long as the ultimate determination of patentability is made on the entire record. The courts review factual conclusions drawn from this evidence for clear error. Whether the evidence presented suffices to rebut the prima facie case is part of the ultimate conclusion of obviousness and is therefore a question of law.

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Evidence & Procedure > General Overview

[HN5] When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. Although the suggestion to combine references may flow from the nature of the problem, the suggestion more often comes from the teachings of the pertinent references, or from the ordinary knowledge of those skilled in the art that certain references are of special importance in a particular field. Therefore, when determining the patentability of a claimed invention which combines two known elements, the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.

Patent Law > Claims & Specifications > Enablement Requirement > General Overview

Patent Law > Inequitable Conduct > Effect, Materiality & Scienter > General Overview

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

[HN6] Obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art to which the patent pertains. This legal construct is akin to the "reasonable person" used as a reference in negligence determinations. The legal construct also presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan.

Patent Law > Inequitable Conduct > General Overview

Patent Law > Nonobviousness > Elements & Tests > Hindsight

Patent Law > Nonobviousness > Evidence & Procedure > Presumptions & Proof

[HN7] To prevent the use of hindsight based on the invention to defeat patentability of the invention, the courts require the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.

Patent Law > Nonobviousness > Elements & Tests > Hindsight

Patent Law > Nonobviousness > Evidence & Procedure > Prima Facie Obviousness

Patent Law > U.S. Patent & Trademark Office Proceedings > Appeals

[HN8] Where the Patent and Trademark Office Board of Patent Appeals and Interferences does not explain the specific understanding or principle within the knowledge

of a skilled artisan that would motivate one with no knowledge of a patent applicant's invention to make the combination, the courts infer that the examiner selected the references with the assistance of hindsight. The courts forbid the use of hindsight in the selection of references that comprise the case of obviousness.

Patent Law > Nonobviousness > Elements & Tests > Ordinary Skill Standard

Patent Law > Nonobviousness > Elements & Tests > Prior Art

Patent Law > Nonobviousness > Evidence & Procedure > General Overview

[HN9] The suggestion to combine requirement is a safeguard against the use of hindsight combinations to negate patentability. While the skill level is a component of the inquiry for a suggestion to combine, a lofty level of skill alone does not suffice to supply a motivation to combine. Otherwise a high level of ordinary skill in an art field would almost always preclude patentable inventions. As the courts recognize, invention itself is the process of combining prior art in a non-obvious manner. Therefore, even when the level of skill in the art is high, the Patent and Trademark Office Board of Patent Appeals and Interferences (Board) must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.

COUNSEL: Richard C. Turner and Grant K. Rowan, Sughrue, Mion, Zinn, Macpeak & Seas, PLLC, of Washington, DC, argued for appellants.

David J. Ball, Jr., Associate Solicitor, Office of the Solicitor, Patent and Trademark Office, of Arlington, Virginia, argued for appellee. With him on the brief were Nancy J. Linck, Solicitor, Albin F. Drost, Deputy Solicitor, and Craig R. Kaufman, Associate Solicitor. Of counsel was Scott A. Chambers, Associate Solicitor, Office of the Solicitor.

JUDGES: Before PLAGER, Circuit Judge, ARCHER, Senior Circuit Judge, and RADER, Circuit Judge.

OPINION BY: RADER

OPINION:

[*1352] RADER, Circuit Judge.

Denis Rouffet, Yannick Tanguy, and Frederic Bethault (collectively, Rouffet) submitted application 07/888,791 (the application) on May 27, 1992. The

Board of Patent Appeals and Interferences (the Board) affirmed final rejection of the application as obvious under 35 U.S.C. § 103(a). See *Ex parte Rouffet*, No. 96-1553 (Bd. Pat. App. & Int. Apr. 16, 1997). Because the Board reversibly erred in identifying a motivation to combine the references, this [*2] court reverses.

I.

Satellites in a geosynchronous or geostationary orbit remain over the same point on the Earth's surface. Their constant position above the Earth's surface facilitates communications. These satellites project a number of beams to the Earth. Each beam transmits to its area of coverage, or footprint, on the Earth's surface. In order to provide complete coverage, adjacent footprints overlap slightly and therefore must use different frequencies to avoid interference. However, two or more non-overlapping footprints can use the same set of frequencies in order to use efficiently the limited radio spectrum. Figure 1 from the application shows the coverage of a portion of the Earth's surface provided by multiple cone shaped beams:

[*1353] [SEE FIGURE 1 IN ORIGINAL]

Frequency reuse techniques, however, have a limited ability to compensate for congestion in geostationary orbits. To alleviate the orbit congestion problem, new telecommunications systems use a network of satellites in low Earth orbit. When viewed from a fixed point on the Earth's surface, such satellites do not remain stationary but move overhead. A satellite's motion as it transmits a plurality of cone-shaped beams [*3] creates a new problem. The satellite's movement causes a receiver on the Earth's surface to move from the footprint of one beam into a second beam transmitted by the same satellite. Eventually, the satellite's motion causes the receiver to move from the footprint of a beam transmitted by one satellite into the footprint of a beam transmitted by a second satellite. Each switch from one footprint to another creates a "handover" event analogous to that which occurs when a traditional cellular phone travels from one cell to another. Handovers are undesirable because they can cause interruptions in signal transmission and reception.

Rouffet's application discloses technology to reduce the number of handovers between beams transmitted by the same satellite. In particular, Rouffet eliminates handovers caused solely by the satellite's motion. To accomplish this goal, Rouffet changes the shape of the beam transmitted by the satellite's antenna. Rouffet's satellites transmit fan-shaped beams. A fan beam has an elliptical footprint. Rouffet aligns the long axis of his beams parallel to the direction of the satellite's motion across the Earth's surface. By elongating the beam's footprint in the [*4] direction of satellite travel, Rouffet's invention

ensures that a fixed point on the Earth's surface likely will remain within a single footprint until it is necessary to switch to another satellite. Because Rouffet's invention does not address handovers caused by the motion of the receiver across the Earth's [*1354] surface, his arrangement reduces, but does not eliminate, handovers. Figure 3 from the application shows the footprints 12 from six beams aligned in the direction of satellite motion 15:

[SEE FIGURE 3 IN ORIGINAL]

The application contains ten claims that stand or fall as a group. Claim 1 is representative:

A low orbit satellite communications system for mobile terminals, wherein the communications antenna system of each satellite provides isoflux coverage made up of a plurality of fan beams that are elongate in the travel direction of the satellite.

The examiner initially rejected Rouffet's claims as unpatentable over U.S. Pat. No. 5,199,672 (King) in view of U.S. Pat. No. 4,872,015 (Rosen) and a conference report entitled "A Novel Non-Geostationary Satellite Communications System," Conference Record, International Conference on Communications, [**5] 1981 (Ruddy). On appeal to the Board, the examiner added an alternative ground for rejection, holding that the claims were obvious over U.S. Pat. No. 5,394,561 (Freeburg) in view of U.S. Pat. No. 5,170,485 (Levine).

On April 16, 1997, the Board issued its decision. Because Rouffet had specified that the claims would stand or fall as a group based on the patentability of claim 1, the Board limited its opinion to that claim. The Board unanimously determined that the examiner had properly rejected claim 1 as obvious over King in view of Rosen and Ruddy. The Board, on a split vote, also affirmed the rejection over Freeburg in view of Levine.

[*1355] II

[HN1] To reject claims in an application under section 103, an examiner must show an un rebutted *prima facie* case of obviousness. See *In re Deuel*, 51 F.3d 1552, 1557, 34 U.S.P.Q.2D (BNA) 1210, 1214 (Fed. Cir. 1995). In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2D (BNA) 1443, 1444 (Fed. Cir. 1992). On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima* [**6] *facie* obviousness or by

rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness. See id.

[HN2] While this court reviews the Board's determination in light of the entire record, an applicant may specifically challenge an obviousness rejection by showing that the Board reached an incorrect conclusion of obviousness or that the Board based its obviousness determination on incorrect factual predicates. This court reviews the ultimate determination of obviousness as a question of law. See *In re Lueders*, 111 F.3d 1569, 1571, 42 U.S.P.Q.2D (BNA) 1481, 1482 (Fed. Cir. 1997). The factual predicates underlying an obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art. See *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 881, 45 U.S.P.Q.2D (BNA) 1977, 1981 (Fed. Cir. 1998). This court reviews the Board's factual findings for clear error. See *In re Zurko*, 142 F.3d 1447, 1449, 46 U.S.P.Q.2D (BNA) 1691, 1693 (Fed. Cir. 1998) (in banc); *Lueders*, 111 F.3d at 1571-72. "A finding is clearly erroneous when, although there is evidence to support [**7] it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *In re Graves*, 69 F.3d 1147, 1151, 36 U.S.P.Q.2D (BNA) 1697, 1700 (Fed. Cir. 1995) (quoting *United States v. United States Gypsum Co.*, 333 U.S. 364, 395, 92 L. Ed. 746, 68 S. Ct. 525 (1948)).

[HN3] The secondary considerations are also essential components of the obviousness determination. See *In re Emert*, 124 F.3d 1458, 1462, 44 U.S.P.Q.2D (BNA) 1149, 1153 (Fed. Cir. 1997) ("Without Emert providing rebuttal evidence, this *prima facie* case of obviousness must stand."). This objective evidence of nonobviousness includes copying, long felt but unsolved need, failure of others, see *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 15 L. Ed. 2d 545, 86 S. Ct. 684 (1966), commercial success, see *In re Huang*, 100 F.3d 135, 139-40, 40 U.S.P.Q.2D (BNA) 1685, 1689-90 (Fed. Cir. 1996), unexpected results created by the claimed invention, unexpected properties of the claimed invention, see *In re Mayne*, 104 F.3d 1339, 1342, 41 U.S.P.Q.2D (BNA) 1451, 1454 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 U.S.P.Q.2D (BNA) 1934, 1936-37 (Fed. Cir. 1990), licenses showing industry respect for [**8] the invention, see *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 957, 43 U.S.P.Q.2D (BNA) 1294, 1297 (Fed. Cir. 1997); *Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 316, 227 U.S.P.Q. (BNA) 766, 771 (Fed. Cir. 1985), and skepticism of skilled artisans before the invention, see *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 U.S.P.Q.2D (BNA) 1529, 1532 (Fed. Cir. 1988). [HN4] The Board must consider all of the

applicant's evidence. See *Oetiker*, 977 F.2d at 1445 ("An observation by the Board that the examiner made a *prima facie* case is not improper, as long as the ultimate determination of patentability is made on the entire record."); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. (BNA) 785, 788 (Fed. Cir. 1984). The court reviews factual conclusions drawn from this evidence for clear error. Whether the evidence presented suffices to rebut the *prima facie* case is part of the ultimate conclusion of obviousness and is therefore a question of law.

[HN5] When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. See *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2D (BNA) 1276, 1278 (Fed. Cir. 1987). Although the [**9] suggestion to combine references may flow from the nature of the problem, see *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 U.S.P.Q.2D (BNA) 1626, 1630 (Fed. Cir. 1996), the suggestion more often comes from the teachings of the pertinent references, see *In re Sernaker*, 702 F.2d 989, 994, 217 U.S.P.Q. (BNA) 1, 5 (Fed. Cir. 1983), or from the ordinary knowledge of those skilled in the art that certain references are of special importance [*1356] in a particular field, see *Pro-Mold*, 75 F.3d at 1573 (citing *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 n.24, 227 U.S.P.Q. (BNA) 657, 667 n.24 (Fed. Cir. 1985)). Therefore, "when determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" See *In re Beattie*, 974 F.2d 1309, 1311-12, 24 U.S.P.Q.2D (BNA) 1040, 1042 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 U.S.P.Q. (BNA) 481, 488 (Fed. Cir. 1984)).

III

The parties agree that the five references asserted by the examiner [**10] are in the same field of endeavor as the invention. The parties also agree that the pertinent level of skill in the art - design of satellite communications systems - is high. On appeal, Rouffet asserts that the examiner and the Board erred by improperly combining references to render the claimed invention obvious.

The Combination of King, Rosen, and Ruddy

The Board first affirmed the rejection of Rouffet's claims over a combination of King, Rosen, and Ruddy. King discloses a system for launching a plurality of satellites into low Earth orbits from a single launch vehicle. Rosen teaches a geostationary satellite that uses a plurality of fan beams with their long axes oriented in an east-west direction to communicate with mobile and fixed terminals on the Earth.

The final, and most important, reference in this combination is Ruddy. Ruddy describes a television broadcast system that uses a series of satellites to re-transmit signals sent from a ground station over a wide area. Rather than using a geostationary orbit, Ruddy teaches the use of a series of satellites in Molniya orbits. A satellite in a Molniya orbit always follows the same path through the sky when viewed from a fixed [**11] point on the ground. Viewed from the Earth, the orbital path includes a narrow, elliptical apogee loop. In order to transmit to these moving satellites from a ground station, Ruddy uses a fan beam with a long axis aligned with the long axis of the orbit's apogee loop. This alignment places the entire apogee loop within the footprint of the beam and eliminates the need for the ground station's antenna to track the satellite's motion around the apogee loop. Ruddy further teaches orbit parameters and spacing of multiple satellites to ensure that a satellite is always in the loop to receive and rebroadcast signals from the Earth station.

King and Rosen together teach the use of a network of satellites in low Earth orbit. Thus, Ruddy becomes the piece of the prior art mosaic that shows, in the reading of the Board, the use of "a plurality of fan beams that are elongate in the travel direction of the satellite." Ruddy, however, is different from the claimed invention in several respects. Specifically, the application claims the projection of multiple elliptical fan-shaped footprints from the satellite to the ground. See Claim 1, *supra*, see also Application at 6, lines 9-11 ("In [**12] addition, in this system, the geometrical shape of the beams 12 is changed: instead of being circular they are now elongate ellipses."). The application's written description further teaches that the invention's fan-shaped satellite beams will minimize handovers. See *id.* at lines 11-16 ("This considerably increases call durations between handovers.").

In contrast, Ruddy teaches that a ground station may use a single fan-shaped beam to transmit to a satellite in a unique Molniya orbit. The ground station transmits a beam into which a series of satellites in Molniya orbits will successively enter. At least two differences are evident: the application teaches projection of multiple beams from a satellite to the Earth, while Ruddy teaches projection of a single beam from the Earth to satellites. Moreover to the extent Ruddy contains a teaching about handovers, its teachings focus on use of the unique Molniya orbit to ensure that a satellite always falls within the beam transmitted by the ground station.

These differences suggest some difficulty in showing a *prima facie* case of obviousness. The Board, however, specifically found that artisans of ordinary skill in this field of [**13] art would know to shift the frame of reference from a ground station following a satellite to a

satellite transmitting to the ground. According proper deference to the Board's finding [*1357] of a lofty skill level for ordinary artisans in this field, this court discerns no clear error in the Board's conclusion that these differences would not preclude a finding of obviousness. While Ruddy does not expressly teach alignment of the fan beam with the apparent direction of the satellite's motion, this court perceives no clear error in the Board's determination that Ruddy would suggest such an alignment to one of skill in this art. Therefore, the Board did not err in finding that the combination of King, Rosen, and Ruddy contains all of the elements claimed in Rouffet's application.

However, the Board reversibly erred in determining that one of skill in the art would have been motivated to combine these references in a manner that rendered the claimed invention obvious. Indeed, the Board did not identify any motivation to choose these references for combination. Ruddy does not specifically address handover minimization. To the extent that Ruddy at all addresses handovers due to satellite motion, [**14] it addresses this subject through the selection of orbital parameters. Ruddy does not teach the choice of a particular shape and alignment of the beam projected by the satellite. Thus Ruddy addresses the handover problem with an orbit selection, not a beam shape. The Board provides no reasons that one of ordinary skill in this art, seeking to minimize handovers due to satellite motion, would combine Ruddy with Rosen and King in a manner that would render the claimed invention obvious.

[HN6] Obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art to which the patent pertains. See 35 U.S.C. § 103(a). This legal construct is akin to the "reasonable person" used as a reference in negligence determinations. The legal construct also presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan. See *In re Carlson*, 983 F.2d 1032, 1038, 25 U.S.P.Q.2D (BNA) 1207, 1211 (Fed. Cir. 1993).

As this court has stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 U.S.P.Q. (BNA) 865, 870 (Fed. Cir. 1983); see also [**15] *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 U.S.P.Q. (BNA) 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed

invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 U.S.P.Q.2D (BNA) 1551, 1554 (Fed. Cir. 1996).

[HN7] To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the [**16] inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.

This court has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In this case, the Board relied upon none of these. Rather, just as it relied on the high level of skill in the art to overcome the differences between the claimed invention and the selected elements in the references, it relied upon the high level of skill in the art to provide the necessary motivation. The Board did not, however, explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. Instead, the Board merely invoked the high level of skill in the field of art. If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields, the Board could routinely identify [**17] the prior art elements in an application, invoke the lofty level of skill, and rest its case for rejection. To counter this potential weakness in the obviousness [*1358] construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.

[HN8] Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of Rouffet's invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness. See *In re Gorman*, 933 F.2d 982, 986, 18 U.S.P.Q.2D (BNA) 1885, 1888 (Fed. Cir. 1991). Lacking a motivation to combine references, the Board did not show a proper *prima facie* case of ob-

viousness. This court reverses the rejection over the combination of King, Rosen, and Ruddy.

The Combination of Freeburg and Levine

Freeburg teaches a cellular radiotelephone system based on a constellation of low Earth orbit satellites that use conical beams to transmit from [*18] the satellite to both fixed and mobile Earth stations. Levine teaches an Earth-based cellular radio system that uses fan beams broadcast from antenna towers. Levine's elliptical footprints are aligned with the road grid. To increase the capacity of traditional ground-based systems through frequency reuse techniques, Levine teaches the use of antennas that broadcast signals with smaller footprints than the prior art system. Thus, Levine actually increases the number of overlap regions between cells and, hence, the number of potential handovers. Figure 1 of the Levine patent illustrates its alignment of beam footprints:

[SEE FIGURE 1 IN ORIGINAL]

[*1359] As a mobile unit (e.g., a driver using a car phone) moves through a succession of overlapping zones, Levine uses selection algorithms to determine which of the cells is aligned with the travel direction of the mobile unit. These algorithms then select this cell for use while continually monitoring intersecting cells in the event that the mobile unit changes direction.

Once again, this court notes significant differences between the teachings of the application and the Levine-Freeburg combination. The critical Levine reference again involves [*19] a beam from an Earth station without any reference to the "travel direction of [a] satellite." Moreover, Levine actually multiplies the number of potential handovers and then uses software to sort out the necessary handovers from the unnecessary. However, the Board explains the reasons that one possessing the lofty skills characteristic of this field would know to account for the differences between the claimed invention and the prior art combination. This court discerns no clear error in that reliance on the considerable skills in this field.

This court does, however, discern reversible error in the Board's identification of a motivation to combine Levine and Freeburg. In determining that one of skill in the art would have had motivation to combine Levine and Freeburg, the Board noted that "the level of skill in the art is very high." As noted before, this observation alone cannot supply the required suggestion to combine these references. The Board posits that the high level of skill in the art overcomes the absence of any actual sug-

gestion that one could select part of the teachings of Levine for combination with the satellite system disclosed by Freeburg.

As noted above, [HN9] the [**20] suggestion to combine requirement is a safeguard against the use of hindsight combinations to negate patentability. While the skill level is a component of the inquiry for a suggestion to combine, a lofty level of skill alone does not suffice to supply a motivation to combine. Otherwise a high level of ordinary skill in an art field would almost always preclude patentable inventions. As this court has often noted, invention itself is the process of combining prior art in a nonobvious manner. See, e.g., *Richdel*, 714 F.2d at 1579; *Environmental Designs*, 713 F.2d at 698. Therefore, even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. Cf. *Gechter v. Davidson*, 116 F.3d 1454, 43 U.S.P.Q.2D (BNA) 1030 (Fed. Cir. 1997) (explaining that the Board's opinion must describe the basis for its decision). In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.

The Board's naked invocation of skill in the art to supply a suggestion to combine [**21] the references cited in this case is therefore clearly erroneous. Absent any proper motivation to combine part of Levine's teachings with Freeburg's satellite system, the rejection of Rouffet's claim over these references was improper and is reversed.

IV

The Board reversibly erred in determining that there was a motivation to combine either the teachings of King, Rosen, and Ruddy or of Freeburg and Levine in a manner that would render the claimed invention obvious. Because this predicate was missing in each case, the Board did not properly show that these references render the claimed invention obvious. Therefore this court reverses the Board's decision upholding the rejection of Rouffet's claims. In light of this disposition, Rouffet's pending motion to remand the case to the Board for further consideration is denied as moot.

COSTS

Each party shall bear its own costs.

REVERSED.